

# INTERDISCIPLINARY TEACHING AND LEARNING

Adonna Clark



Digitized by the Internet Archive  
in 2012 with funding from  
LYRASIS Members and Sloan Foundation

<http://archive.org/details/interdisciplinar00clar>





The undersigned, appointed by the Schwob School of Music at Columbus State University, have examined the Graduate Music Project titled

INTERDISCIPLINARY TEACHING AND LEARNING

presented by Adonna Clark

a candidate for the degree of Master of Music in Music Education  
and hereby certify that in their opinion it is worthy of acceptance.

  
(Project Advisor)





Columbus State University

**Interdisciplinary Teaching and Learning**

by

**Adonna Clark**

**GRADUATE MUSIC PROJECT**

**SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF MASTER OF MUSIC IN MUSIC EDUCATION**

Schwob School of Music

Columbus, Georgia

May 2009



## **Acknowledgements**

There are many people that I would like to thank for their role in my life the past few years. It is difficult to verbally express the extent of my gratefulness to these amazing teachers. I have been exceedingly blessed to have had the opportunities to work with them. I will begin with probably the most influential person in my graduate level journey. I will forever be indebted to Dr. Debbie Jacobs, both my advisor and teacher, for her awe-inspiring example of how a teacher can transform the life of a student. I have such an admiration for her wholehearted example as an educator. Her unwavering support continues to inspire me. My prayer is that I bless those around me as she has blessed me.

I would also like to thank Dr. Ron Wirt whom I have had the good fortune to have known for many years. His help with the many bumps in the road made it possible for this project and the overall completion of my degree to come to fruition.

In regards to the nuts and bolts of research and writing, I want to thank Roberta Ford for her guidance. She made the sometimes tedious process more enjoyable. In the music library I would like to thank you Judy Moore for her kindness and helpfulness despite my many overdue items.

For my dear friend and colleague Heidi Platz, who learned to play the cello just for me, I thank you. Not only were you the perfect pupil but you are a wonderful friend. To my friends and colleagues, Jan Hyatt, Shirley Paul and George Cobb, I offer a sincere thank you for your help and friendship during these past years. Your support has meant more than you could imagine.



I have been blessed with devoted parents who have always managed to keep up with my not-so-boring life as well as my adventures in motherhood. Thank you for your constant prayers. You will always hold the keys to my heart.

I would especially like to thank my family for their patience and helpfulness in daily life. By filling in the gaps when I was not available, each of you has played an important part in this process. You have been a wealth of entertainment and you are the electric sparks that have kept my fire lit. A special mention of thanks to my oldest son, Carter, who literally became an official transporter of siblings to everywhere including the I don't know how to get there.

Thank you to my wonderful husband, Art. You managed to remodel a house right under my nose. Thank you for getting it done while I wasn't paying attention. Over the past several years, you have eaten far too much KFC and more than your share of 10:00 p.m suppers. Without you and your support I could not have completed this task.

Finally, I want to thank my Father in heaven who has graciously blessed me with loving people who have either led or have accompanied me along the path of this life. I know that He is not finished with me yet.



## **Table of Contents**

Chapter One: The Beginning of Arts Education in America	1
Chapter Two: The Problems of No Child Left Behind	3
Chapter Three: The Integrated Arts	
History	5
Definitions of Integration	6
SCEA Definitions Proposal	8
What People Believe about Arts Integration, Intelligence and the Brain	9
Interdisciplinary Connections Programs and Methods	10
An Example of Infusion: The Waldorf Method	12
Chapter Four: What does high quality integrated arts instruction look like?	15
Chapter Five: Middle School Survey on the	
Use of Interdisciplinary Arts Integration	19
APPENDIX A: Sample Interdisciplinary Arts Lesson Plans	24
Math Lesson Plan: Statistics	25
Chorus, General Music, Social Studies and Language Arts Lesson Plan:	
The Holocaust	27
Language Arts Lesson Plan: Music Interview Project	39
Reading Across the Disciplines: Imagine an Occupation in the Arts	43
Social Studies Lesson Plan: South and East Asia	46
APPENDIX B:	53
Other Interdisciplinary Resources for Teaching	54
References	56



## **Table of Contents**

Chapter One: The Beginning of Arts Education in America	1
Chapter Two: The Problems of No Child Left Behind	3
Chapter Three: The Integrated Arts	
History	5
Definitions of Integration	6
SCEA Definitions Proposal	8
What People Believe about Arts Integration, Intelligence and the Brain	9
Interdisciplinary Connections Programs and Methods	10
An Example of Infusion: The Waldorf Method	12
Chapter Four: What does high quality integrated arts instruction look like?	15
Chapter Five: Middle School Survey on the	
Use of Interdisciplinary Arts Integration	19
APPENDIX A: Sample Interdisciplinary Arts Lesson Plans	24
Math Lesson Plan: Statistics	25
Chorus, General Music, Social Studies and Language Arts Lesson Plan:	
The Holocaust	27
Language Arts Lesson Plan: Music Interview Project	39
Reading Across the Disciplines: Imagine an Occupation in the Arts	43
Social Studies Lesson Plan: South and East Asia	46
APPENDIX B:	53
Other Interdisciplinary Resources for Teaching	54
References	56



## **Chapter One: The Beginning of Arts Education in America**

In the early 1600's, the Pilgrims and the Puritans brought their musical traditions with them to establish a new life. The survival of their families depended upon their ability to provide food, shelter and clothing. Despite the challenges they faced, the colonists recognized the importance of educating their children. In 1642, the Massachusetts School Law was passed. It required town leaders to require parents to provide their children with an elementary education. Music training was not part of this newly required education. Due to the demands of life, the colonists were unable to nurture their musical abilities. Those who had developed musical skills did not pass their training on to others or to their children. For close to a century, the worship services consisted of the same tunes that had been brought with them from England. In 1721, Reverend Thomas Walter wrote "the tunes are now miserably tortured and twisted and quavered in our churches, into a horrid medley of confused and disorderly voices. Our tunes are left to the mercy of every unskilled throat to chop and alter, to twist and change, according to their infinitely diverse and no less odd humours and fancies..." (Mark, 1996, p. 4-5). Fortunately, music teachers began to travel from town to town to teach music classes. Adults and children could participate in the classes for a fee. It was in 1838 that music became part of the public school day.

In 1869, local Boston businessmen realized that American craftsmen needed training in art. This need became apparent as local businessmen noticed that imported European goods were superior to American made goods. They realized that they were competing against European countries that had centuries old artistic training available for their craftsmen. Realizing the American need for training, a program was set up to teach



art skills to local men, women and children. By 1870, Massachusetts instituted drawing as a required subject in education (Purnell, 2004, p. 154). Since that time, we have learned that instruction in the arts teaches children invaluable lessons related to life. Eliot Eisner, in his “Ten Lessons the Arts Teach” said:

1. The arts teach children to make good judgments about qualitative relationships. Unlike much of the curriculum in which correct answers and rules prevail, in the arts, it is judgment rather than rules that prevails.
2. The arts teach children that problems can have more than one solution and that questions can have more than one answer.
3. The arts celebrate multiple perspectives. One of their large lessons is that there are many ways to see and interpret the world.
4. The arts teach children that in complex forms of problem solving, purposes are seldom fixed, but change with circumstance and opportunity. Learning in the arts requires the ability and a willingness to surrender to the unanticipated possibilities of the work as it unfolds.
5. The arts make vivid the fact that neither words in their literal form, nor number, exhaust what we can know. The limits of our language do not define the limits of our cognition.
6. The arts teach students that small differences can have large effects. The arts traffic in subtleties.
7. The arts teach students to think through and within a material. All art forms employ some means through which images become real.
8. The arts help children learn to say what cannot be said. When children are invited to disclose what a work of art helps them feel, they must reach into their poetic capacities to find the words that will do the job.
9. The arts enable us to have experience we can have from no other source, and through such experience, to discover the range and variety of what we are capable of feeling.
10. The arts’ position in the school curriculum symbolizes to the young what adults believe are important. (2000, 14)



## **Chapter Two: The Problems of No Child Left Behind**

Despite all of the research that lauds the benefits of learning in the arts, everyone still “do(es) not experience the arts as an integral part of their learning experiences” (Purnell, 2004, p. 157). The No Child Left Behind Act of 2001 (NCLB) was passed with the premise that all children can learn; including children of color and those living in poverty. It insists that students are entitled to highly qualified teachers and it established that the arts are “core academic” subjects. By 2014, schools should meet the test score targets based on a goal of 100 per cent proficiency. Unfortunately, the funding allocated by the law does not meet the needs of schools who have been consistently “under-resourced” (Darling-Hammond, para. 8). School districts who do not comply can be “reconstituted or closed” or they must allow students to transfer to compliant schools (Darling-Hammond, 2007, para. 3).

In order to meet the demands of NCLB, many principals and school leaders have changed their school schedule to increase instructional time in the traditional core subjects (GAO, 2009). Since funding was not available for extending the school day, exploratory classes (band, orchestra, chorus, Spanish, visual art, physical education and the industrial arts class) length were shortened to a forty-five minute periods. The schedule change resulted in a forty-two hour increase in instructional time in mathematics, language arts, science and social studies. This has resulted in a substantial decrease of instructional time in the fine arts and other exploratory subjects per school year. Since 2006, more schools have either changed or considered changing their school schedule to accommodate additional instructional time in mathematics, language arts, science and social studies. Again, there are no plans to increase the length of the school



day and if implemented this will result in another decrease of instructional time which will be equivalent to twenty class periods. These changes that have occurred as a result of NCLB are counter to what research tells us about how children learn.

Hopefully, politicians will begin to understand that NCLB has not caused our nation to move towards achieving academic success. For our students, it would be best if the NCLB law was not renewed. Instead, school districts should implement interdisciplinary teaching and learning into our school curriculums. The fine arts should be imbedded into mathematics, science, social science and language arts. Students should receive regular instruction in music, visual art, drama and dance. Also, training in the interdisciplinary arts should be available and ongoing to current and future teachers. Teachers who receive consistent training are better equipped to motivate students toward achievement. It will also aide in the avoidance of teacher burnout.



## Chapter Three: The Integrated Arts

### History

The idea of “integrated arts” has been evolving since the beginning of the 20th century (Burnaford, Brown, Doherty & McLaughlin, 2007, p. 2). In 1918, two different reports, “The Cardinal Principles of Secondary Education” and William Kilpatrick's report “The Project Method” were the beginnings of what we now refer to as "integrated curriculum." Both reports recommended that school curriculum should be organized into themes based on meaningful learning experiences. Some of the suggested themes were health, civics and fundamental processes (as cited in Burnaford, et al., p. 2). In 1936, a report titled “A Correlated Curriculum” described “subject-specific learning with interdisciplinary and integrated options” (p. 2). This report gave examples of “correlations” between English and other subjects. By the mid-twentieth century the terms “problem-based learning” and “inquiry learning” suggested that learning should be based on student questions. These questions become the “investigations or problems” to solve (Burnaford, et al., p. 2). J. Beane explained this multidisciplinary path to learning:

Imagine for the moment that we are confronted with some problem or puzzling situation in our lives. How do we approach the situation? Do we stop and ask ourselves which part of the situation is Language Arts, or music, or mathematics, or history, or art? I don't think so. Instead, we take on the problem or situation using whatever knowledge is appropriate or pertinent without regard for subject area lines (as cited in Burnaford, et al., p. 2).

### Styles of Integrated Teaching

Liora Bresler named four styles that are used by teachers to integrate the arts into their curriculum. **Subservient** is the most prevalent style. It involves “spicing” up other subjects by activities such as singing a song about the solar system or “Fifty Nifty United



States” to learn the names of the states. Although it is not forbidden by researchers, this is not true integration since it does not develop music skills (as cited in Burnaford, et al., 2007, p. 22). **Co-equal** is a cognitive integration style whereas it is mostly used by those with extensive training in some art form or in collaboration with an arts specialist.

**Affective** integration is used to set a mood or stimulate creativity. An example would be playing background music in order to expose them to various genres or to calm them.

**Social** integration is the integration that is advocated mostly by the traditional school principal. Generally, music is utilized for the purpose of creating community for social events. Without the help of an arts specialist the result is not usually “education in the arts” but merely presentation and appreciation (Goldberg, Scott-Kassner, 2002, p. 1057). There are other terms and phrases that are very similar in meaning such as *arts-infused curriculum*, *learning in and through the arts* and *learning with the arts*. Each of these represent something similar yet similar slightly different to arts integration (Burnaford, et al., p. 11).

### **Definitions of Integration**

The Consortium of National Arts Education Associations organized an interdisciplinary committee that created an important report on authentic connections in interdisciplinary teaching. The committee members consisted of the American Alliance for Theatre and Education, the Music Educators National Conference, the National Art Education Association and the National Dance Education Organization. This report defined the different ways that teachers can integrate. **Parallel instruction** takes place when two teachers agree to focus on a common concept. The teachers do not necessarily draw attention to the connections between the two disciplines; however, they do



synchronize the instruction. It is up to the students to make associations between the two disciplines. A variation of parallel instruction involves planning projects based on connections standards between the disciplines. However, Snyder warns against mere appearances of connections. For example, showing the painting of Washington crossing the Delaware while teaching about the Revolutionary War will enhance the lesson and hopefully make it more memorable, however, it is not true parallel instruction (Snyder, 1999, p.4).

Another form of integration is *collaboration*. Teachers collaborate at the start and end of instruction in order to evaluate learning (Consortium, 2002). This is the most popular perhaps because it requires very little skill and no arts understanding. It could possibly be compared to a “seesaw” where emphasis continually shifts from one side of the “board” to the other. Although it is not true integration when taught separately, it can become “integrated instruction” when the teachers work together to demonstrate the connections between the subject areas and meet standards from both subjects. It can be a powerful teaching and learning tool. Only then is it authentic interdisciplinary teaching (Snyder, 1999, p. 3-4). Another model is *cross-disciplinary instruction or correlation*. This model draws upon two or more subjects that deal with a shared theme.

Authentic interdisciplinary arts integration is embedded instruction within language arts, social studies, mathematics, science, music, visual art and theatre when a classroom teacher and an arts specialist collaborate. It is here that a word of caution should be made. Integrating the arts should be instituted as a means to enhance learning in all areas. It is not a substitution for teaching the arts. Music, visual art, drama and



dance classes should be taught by specialists in their applicable field at designated times that are set aside for each specific subject.

## SCEA Definitions Proposal

In 2007, the Southeast Center for Education in the Arts (SCEA) at the University of Tennessee at Chattanooga proposed comprehensive definitions that are consistent with the research literature in *Arts Integration Frameworks, Research & Practice: A Literature Review* by the Arts Education Partnership, 2007.

Arts Integration is instruction combining two or more content areas, wherein the arts constitute one or more of the integrated areas. The integration is based on shared or related concepts and instruction in each content area has depth and integrity reflected by embedded assessments, standards, and objectives.

Integrated (or interdisciplinary) learning uses the knowledge and methods of several disciplines in combination to explore a central concept, object or issue as a framework for building student competence. The arts can enrich and deepen student understanding in this educational framework. Knowledge and study of the arts develop the abstract thinking skills necessary for complex and imaginative problem solving.

Curriculum integration is a way of organizing studies around real-life issues that are significant to both young people and adults, and applying content and skills from many subject areas and disciplines at the same time. Curriculum integration is a teaching approach that enables students and teachers to identify and research problems and issues without regard to subject area boundaries, providing students the experience in a learning setting that will prepare them for effective teamwork in the future.

Integrating curriculum with the arts involves:

- Organizing instruction that is often drawn from life experiences – allowing students to question and engage in real-life issues
- Combining subject areas – not separating them. Students learn and use skills from all disciplines and across disciplines to become knowledgeable about personal and global issues
- Developing skills and applying knowledge in more than one area of study. In and evaluate and draw reasoned conclusions from what they see and hear.



## **What People Believe about Arts Integration, Intelligence and the Brain**

The United States has had numerous research and legislative mandates that proclaim the human need for the arts to be an integral part of education. One research study surveyed seventy-five third through fifth grade elementary public school teachers. Of the forty-three percent of the teachers responded, one hundred percent agreed "that integrating the arts in other core subjects either improves, or greatly improves, the teacher's ability to meet their students' multiple learning styles." Also, "ninety-six percent of the teachers surveyed that arts integration improves, or greatly improves, the teacher's ability to work with special needs and at risk students" (Purnell, 2004, p. 157). The study also indicated that "ninety-four percent of the teachers surveyed felt that arts integration improves, or greatly improves, overall academic achievement" (Purnell, 2004, p. 157). Other data indicate that most American students do not receive integrated arts learning experiences. Two-thirds of the teachers polled had never taken or participated in integrated arts or related arts professional development. Having received no training in arts integration it is no surprise that the majority of classroom teachers have made very limited efforts to include the arts in their classroom teaching. Over half of the teachers surveyed did not believe that they had their administrator's support nor did they have classroom materials for integrating the arts into daily lessons. In reference to the current demands of standardized testing, approximately half of the teachers expressed the belief that standardized tests do not accurately measure academic achievement (Purnell, 2004, p. 158).



In his book *Strong Arts, Strong Schools*, Charles Fowler (1996, p. 39) questioned current thoughts on intelligence:

Among the great movers of the twentieth century, who was the smartest and most important? Physicist Albert Einstein, psychoanalyst Sigmund Freud, social reformer Mohandas Gandhi, modern dance pioneer Martha Graham, Communist revolutionary Vladimir Lenin, painter Pablo Picasso, composer Igor Stravinsky, or writer Virginia Woolf? Harvard University psychologist Howard Gardner remarked that asking who is the smartest probably “isn’t a very good question.” Collectively, however, these outstanding thinkers created much of our present-day consciousness: the modern mind. We cannot “compare one kind of intelligence with another kind of intelligence,” Gardner says. “They are *sui generis*,” unique.

James Zull describes the brain as having four ways that it learns. In his words he says:

I propose that there are four pillars of human learning: gathering, analyzing, creating, and acting. This isn’t new, but its match with the structure of the brain seems not to have been noticed in the past. So I suggest that we ask our students to do these four things, they will have a chance to use their whole brain.... Biologically, it appears that our thinking brain evolved by building on parts that are now known to be involved in emotion and feeling. Are we feeling optimistic, frustrated, bored, satisfied, eager, or afraid? The fascinating thing is that these feelings come from the brain itself and its perceptions as to what is happening to us and how we like those things. The feelings then are both created and perceived by the brain. They directly influence our behaviors and attitudes. For students they determine whether or not they are motivated to learn. The biological basis for all this is that the emotion centers of the brain are strongly connected to the thinking areas. Emotion and thought are physically entangled—immensely so!

## **Interdisciplinary Connections Programs and Methods**

*Artist-in-residence programs* have proven to be a very successful method for integrating with other core subjects. An artist is selected to come to work with a collaborating teacher. Together, the teacher and the artist develop the lesson and teach the standards for both subjects. Ideas for collaborations could be the science of musical sound, the visual and musical history of the civil rights movement or painting and math.



*Arts education centers* maintain databases of performers and teachers who conduct workshops and performances at local schools for a nominal fee. Most museums offer hands-on activities in the children's section. These programs vary from year to year as new exhibits come and go. The Columbus Museum in Columbus, Georgia offers a unique program in which "trunks" are filled with related props, media, books and other items that teachers can borrow for interdisciplinary ideas. Most of the themes for the trunks are related to the traveling exhibits within the museum. They are labeled according to the recommended grade levels. Local children's theatre or opera houses plan programs at least a year in advance. With advanced planning, the language arts classes could read the book title of the upcoming performance and then go to the play. Often, the theatre will provide the teacher with lesson plans and ideas for interdisciplinary arts lessons. This is an excellent option for the novice teacher who wants to integrate but does not feel comfortable in doing so. At the Springer Opera House in Columbus, Georgia, book titles that have been performed in the past include *Sarah Plain and Tall*, *Sadako and a Thousand Paper Cranes*, *The Diary of Anne Frank*, and *Bridge to Terabithia*.

The traditional school calendar presents challenges for collaborative planning. However, through consistent efforts, a healthy learning community where teachers openly share with each other can develop. Supportive principals can help teachers by arranging collaborative planning. The final phase of integration is **infusion or arts-infused**. Infusion is total immersion in the arts and can only develop once the school has restructured its goals and its schedule. Subjects are interwoven together much like everyday life. Real life community problems become part of the curriculum (Snyder, 1999, p. 5). The integrity of each discipline is carefully maintained as the arts become



“the lab for learning in all disciplines.” Basic personal and interpersonal skills are practiced and taught by both teachers and students. Within the arts-infused school there is a sense of “trust, respect and equality” amongst the members of the school community. Funding is provided for an adequate number of arts specialists and collaborative planning time is provided for the teachers. Using appropriate vocabulary, the children describe their work to the adults. Instead of test scores, student success is referred to as goals. Discipline strategies have been developed by administrators, parents, teachers and students. They are designed to help students grow and learn better ways of overcoming challenges. Teachers collaborate during joint meetings. And parents are always welcome in the school. For everyone, it is a joy to go to school!

### **An Example of Infusion: The Waldorf Method**

The Waldorf method is an interesting model of integrating the arts into education. It has been one of the fastest-growing educational models in the world. Currently, there are 130 Waldorf schools in the United States and 700 worldwide. Bill Gates, who is a graduate of a Waldorf school, credits his success to his schooling. The Gates Foundation, the world's largest foundation funder, has embraced Waldorf ideas of teaching and learning and funded many schools that serve minority populations, particularly in areas where there has been little hope for the American dream. The Gates foundation has refined the “three R's” (Oberman, 2007, p. 2):

**Rigor:** All students need the chance to succeed at challenging classes, such as algebra, writing and chemistry.

**Relevance:** Courses and projects must spark student interest and relate clearly to their lives in today's rapidly changing world.

**Relationships:** All students need adult mentors who know them, look out for them, and push them to achieve.



Learning includes many field trips, journal reflections, hands-on learning and class looping. The arts are central to the method and teachers continually work to develop their own personal artistic skills. The teachers truly believe that by building their own personal skills they become better equipped to propel artistic growth within the students. This is the best way to lead students through their own developing artistry. Teachers plan according to student developmental readiness and music, drama, movement, dance and visual art are “embedded in nearly every element of the …classroom” (p. 18).

Our world has become so complex that to meet the educational needs of our students we must reconstruct our world. Just a few years ago, Wynnton Arts Acadamy (WAA), an elementary school in Columbus, Georgia, was faced with an important decision. Not having met “Annual Yearly Progress” (AYP) for several years, Wynnton school leaders needed to take the school into a new direction. In 2005, Wynnton became a fine arts magnet school (Clark, personal communication, March 3, 2009). Over a three-year phase in the school added full-time arts teachers: music, visual art, drama and dance. The school also has a full-time arts coordinator and a part time arts clerk. The Wynnton Arts Academy’s mission is; “to continue the tradition of excellence in education through the positive interaction of students, staff, parents, and community to prepare for successful living by igniting the desire for lifelong learning through immersion in the Arts” (WTVM, 2008). The four full-time fine arts educators collaborate with classroom teachers to integrate the arts into the curriculum. Each day of the week a different fine art is studied during the specified arts time. In 2008, Wynnton Arts Academy became the first fine arts charter elementary school in Georgia. The principal, Ms. Nancy Johnson, was asked if she would ever consider returning to the former methods of teaching. Ms.



Johnson emphatically exclaimed, “No way! I could never go back to the old way of doing things!” (Clark, A. personal communication, March 3, 2009).



## Chapter Four: What Does High Quality Integrated Arts Instruction Look Like?

In *Champions of Change* (COC) (Fiske, 1999, p. 58-59), successful schools share several common factors: 1) a supportive administration, 2) highly skilled artists, 3) adventuresome teachers who are willing to take risks, 4) well-defined learning objectives, 5) a matching of objectives and assessment plans, 6) a schedule that enables convenient visits for artists, 7) teacher selected art forms, 8) sharing at faculty meetings, and 9) a good steering committee.

The COC report contains a wealth of interviews and recorded observations of artists, teachers, principals and coordinators. Researchers found several criteria that exist in schools with effective integration:

- 1) Students understand the connections; at completion they have developed an understanding of larger ideas.
- 2) Students are serious about their work.
- 3) Students go beyond written and spoken word by using artistic forms. They understand that there are other ways of “knowing.”
- 4) Both the artistic lesson and the traditional core subject are of equal importance.
- 5) Rubrics and scoring guides were created during the development of the lessons.
- 6) Lesson objectives and plans have been developed from subject area(s) and the arts.

The end product is artistic ( p. 58).

In 2001, the Arts Education Funders Collaborative, or AEFC, provided funds for four sites within the San Francisco Unified District to set up high quality arts programs. Each site had an “over-arching” evaluation that documented the program and examined



patterns and lessons that emerged from the overall project. These evaluations and “lessons” were compiled into an article by Dale Rose. Each site had been selected based on their stated purpose to “promote thoughtful planning regarding arts education at school sites, experiment with models of what San Francisco schools might offer in arts education if given additional resources, and evaluate the impact of expanding arts education offerings on the school environment, teachers and students” (Rose, 2006 p. 2 ). The students were to receive high-quality, in-depth, sequential arts instruction within a school environment. AEFC requested that everyone (staff, students and parents) be involved in the project and offered technical assistance to help plan the arts programs. The programs were to include resident artists, art teachers, and classroom teachers. They predicted that classroom teachers would experience personal satisfaction due to student learning and development. Each site was to improve the school environment, classroom instruction, teacher satisfaction and student learning and development. Funds were used to purchase supplies such as videos and kilns, implement artist residencies in multiple disciplines and conduct professional development. At the end of the four-year grant the sites compiled a list of “learned lessons” that they believed would be beneficial to pass on to others. This is what they said:

1. Those involved should understand the need for quality planning time. Each site took six months or more to develop a plan and close to three years to implement it. Everyone should understand that the program is a process.
2. Involve teachers by requesting their input in the scheduling. Make changes as needed.

After trial and error, some sites found that there were times during the day that the arts did not work well, such as immediately after recess or before the lunch break.



3. Set realistic goals that clearly link to program activities.
4. Focus program goals on two or three related areas. Do not try to do too much.
5. Designate or hire an arts expert/coordinator starting with the grant application. The role of the arts coordinator is to administer the program by serving as the central representative of program activities. The program coordinator should have “autonomy and responsibility for the program.” He/she facilitates program meetings among teachers, serves as contact representative for artist residencies and listens to teacher input concerning compatibility. He/she provides teachers with resources, arranges reimbursements, regularly observes instruction including artist residencies and may even apply for more grants. The importance of the arts program coordinator position cannot be overemphasized (Rose, 2006, p. 10).
6. Those schools that were most successful had “specialists” in at least one artistic discipline. These experts were valuable for their input during the planning stages. The most successful programs allowed the local artist decision-making authority that influenced the implementation of the program.
7. Ensure that the activities are feasible, given available time, staffing and other resources.
8. Establish a committee for the arts. Members should be dedicated to arts programming and have some experience with or eagerness to learn arts education. They should be willing to make a long-term commitment.
9. Empower an Arts Committee to make decisions and significantly influence program planning.



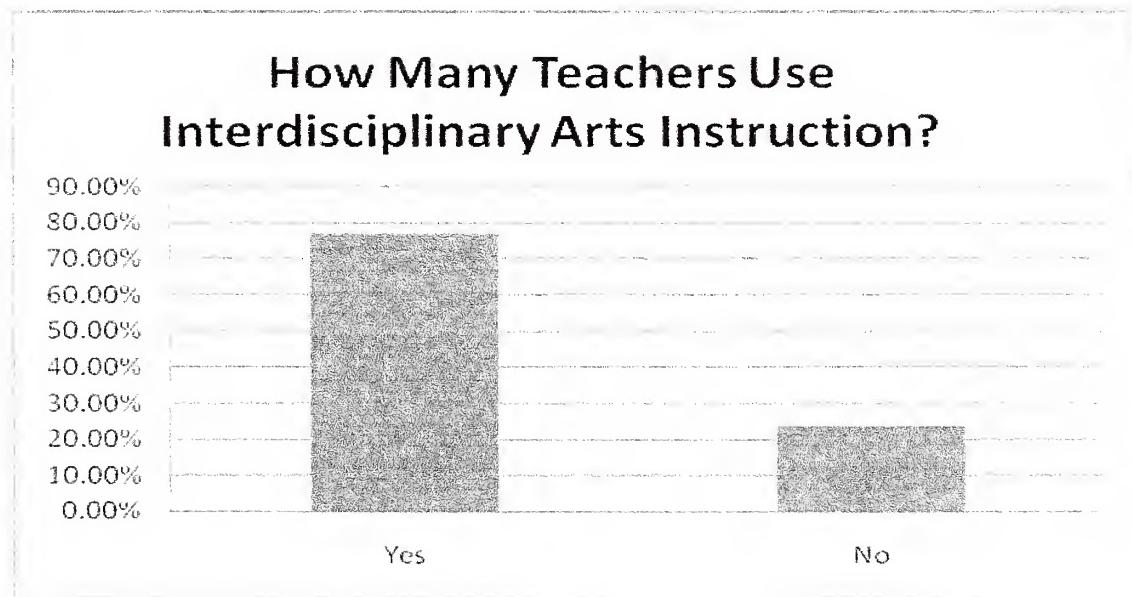
10. Provide ongoing professional development for teachers through funding. In order to create a sustainable interdisciplinary arts program, professional development is vital. Staff development should stress how to infuse the arts into the entire school curriculum. Encourage teachers to use peer accountability. Give teachers opportunities to observe and assess one another. Peer to peer discussions enable the teachers to manipulate or fine tune lessons that may not be completely developed. The schools that were the most successful had held their teachers accountable for using what they had learned.



## Chapter 5: Middle School Survey on the Use of Interdisciplinary Arts Integration

In March 2009, teachers of Midland Middle School of Midland, Georgia, participated in an online interdisciplinary arts survey. The teachers were asked to answer three questions concerning arts integration. For clarity, the survey defined both phrases *integrated arts* and *interdisciplinary arts instruction* to mean instruction that combines two or more content areas in which the arts constitute one or more of the integrated areas by means of collaboration with other teachers, arts specialists (professional artists/teachers or musician/teachers) and/or community artists/musicians. Of the fifty-five middle school teachers, 32% responded. Of the participants, 76.5% responded that they did indeed use interdisciplinary arts instruction in their teaching. (See Figure 1)

Figure 1



The second question allowed the respondents to check as many answers as were applicable to their teaching. Please note that some questions are very similar, however



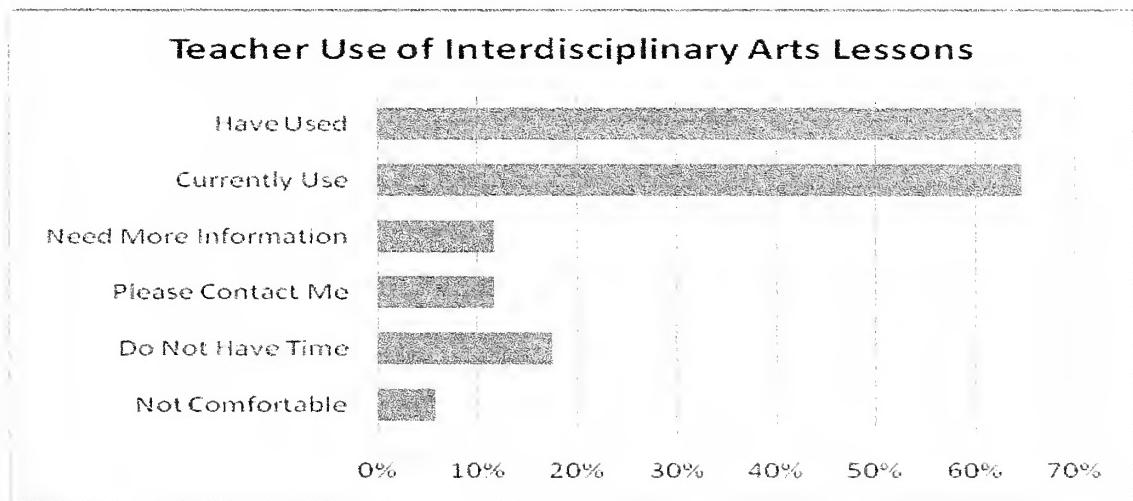
one may select any of the choices for the purpose of identifying their current use of such.

Teachers could describe their use of interdisciplinary arts as:

1. I do not feel comfortable working in other subject areas.
2. I am not sure that I have time to use interdisciplinary lessons.
3. I would like an artist/musician specialist to contact me.
4. I would like to know more about interdisciplinary teaching and learning.
5. Currently, I use interdisciplinary teaching in my classroom.
6. I have used interdisciplinary lessons in the past.

A very small percentage, only 6% of the teachers surveyed stated that they were uncomfortable working in other subject areas. The number of teachers who were concerned about the time commitment involving the creation of interdisciplinary lessons was rather small, only 17.6%. Twelve percent of the teachers wanted more information. They also requested that a fine arts specialist contact them. The majority of the participants, 64.7% have used or currently use interdisciplinary teaching in their classroom. (See Figure 2)

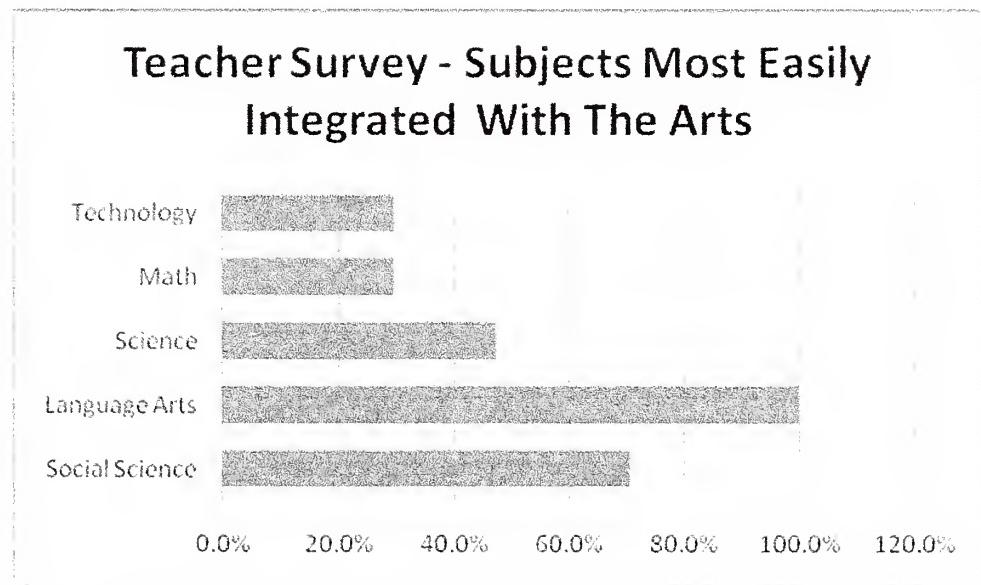
Figure 2





The third and final question was “What subject(s) do you think are most easily integrated with the arts?” Respondents were given a list that included social science, language arts, science, math and technology. Teachers were instructed to check all that were most easily integrated with the arts. Respondents unanimously agreed that language arts was the most easily integrated subject. Social science received 71% of the vote which made it the second most easily integrated subject. Science received 47% of the vote for the third easiest subject to integrate with the arts. Math and technology tied at 29%. (See Figure 3)

Figure 3



Of the teachers who responded to the survey approximately 66% responded positively to using the arts in their teaching. For further research it would be most interesting to poll teachers at both the county and state levels on the use of interdisciplinary arts in classrooms. Now is the time to influence education towards



reaching the whole child. We cannot focus merely on test scores because this does not represent true learning nor does it foster a desire for lifelong learning.

The richest reward that students gain from an immersion in the arts is that they develop new ways of interpreting old information, thus making the same information new again. Fashions come and go simply because consumers become bored with monotony. It is the very nature of human desire to develop new ideas or to create something new out of the mundane. We must engage our students in the discoveries of learning by nurturing their youthful curiosity. Anyone can memorize facts but it takes more energy to create something unique. Integrating the arts into the curriculum will not only capture the attention of our youth and keep them focused on the learning tasks at hand. It will also reinvigorate the teacher.

In 2000, Reed Larsen of the University of Illinois at Urbana-Champaign, conducted a study on the development of adolescent initiative. He wanted to determine “how to get adolescents fires lit.” His research found that adolescents often found it difficult to concentrate on class work and homework. In simple terminology, the adolescents were bored out of their minds. “Low levels of intrinsic motivation” and “high rates of boredom” occurred while in school and outside of the school day. Larsen’s research found that the older the student, the more bored they were with school and life in general. He also found that when children and youth participated in effective voluntary youth activities that they “become active agents in ways that rarely happen in other parts of their lives” (Larsen, 2000, 178).

Integrating the arts into the curriculum will require more effort on the part of teachers and administrators. However, the rewards of investing in the lives of students



will result in rich dividends for American society for many years to come. Harriet Fulbright once said that “education has more than important implications for any democratic system. It is the essential cornerstone for the system, and we neglect it at our peril. Through scientific research we have learned so much about how humans learn. Let us put into practice [the scientific research] in our schools and communities not only to improve our childrens’ future employment possibilities, but to strengthen the foundations of our democratic society” (as cited in Oddleifson, 1996, p. 2). We must do everything in our power to allow children to develop to their fullest potential. By doing so, everyone profits.



## APPENDIX A

### Sample Interdisciplinary Arts Lesson Plans



## **Math Lesson Plan: Statistics**

### Goals:

1. Students will follow along sheet music that has been printed on overhead projector while student performers play the music.
2. Students will identify how many times a certain note occurs in a piece of music.
3. Student musicians are given recognition for their “intelligence” in music.
4. Teacher introduces an engaging lesson that explores various methods of demonstrating curriculum content.

### Materials:

1. Accomplished student performers with instruments (Suggestions: recorder, violin, vibraphone, keyboard, etc.)
2. Non-copyright music, a new composition written by a student(s) [written in music class or at other time prior to this lesson]
3. Music has been printed on overhead transparency.
4. Individual copies of the tune for each class member to work with AFTER the demonstration

### Process:

Students will have had elementary music and developed the skill to read music at the beginning level. Music notation symbols that will be used should be written on the board for recognition with the appropriate label underneath: quarter note, quarter rest, half rest. Teacher (or student) posts newly composed music on the computer/TV/aver key. [Music level can be adjusted according to the level of experience associated with the class]



Teacher draws the music note/rests that the class will be counting. The teacher asks students questions that will help them to make comparisons of the different musical notes.

Teacher points out a musical note that the students will be listening and watching for in the music. Student performers should play two pitches--one high and one low.

Student performers demonstrate the newly composed rhythm or song while listeners follow along with the music. Teacher points out notes as they are occurring.

Students will search for the given music note to determine how many times it occurs.

Students write their answer on their papers.

Evaluation:

Once everyone has their answer, the performers perform the music again while the teacher and students follow along using the overhead projector. The teacher and class determine how many times the note occurs in the music.

Journal questions:

Why would this information be important?



**Chorus, General Music, Social Studies and Language Arts Lesson Plan:****The Holocaust**

The following integrated lesson provides an opportunity for the Language Arts, Chorus or General Music and Social Studies and Reading teachers to collaborate a meaningful unit of instruction that “chunks” several standards together.

**Standards:**

English Language Arts Grade 6 The student reads a minimum of 25 grade-level appropriate books or book equivalents per year from a variety of subject disciplines.  
SS6G8b Locate on a world and regional political-physical map the countries of Belgium, France, Germany, Italy, Poland, Russia, Spain, Ukraine, and United Kingdom.  
SS6H7b Explain the impact of WWII in terms of the Holocaust.

**QCC Standards for Fine Arts (Chorus):**

1. Demonstrates correct posture for singing.
2. Demonstrates correct breathing techniques for vocal production.
3. Sings accurate pitches and rhythms.
4. Sings scales, arpeggios and vocalizes from memory.
5. Sings with clear vowel sounds, proper diction and appropriate tone quality.
16. Sings from memory selected music for public performances.
18. Describes how technology is used to transcribe, edit, compose and perform music on a computer station.
23. Demonstrates knowledge of composers of selected repertoire and the historical/cultural context of works being performed.



24. Explains the importance of contributions of various ethnic cultures to selected repertoire.

Goals:

Students will sing one octave major scale using solfege syllables while demonstrating the correlating hand symbol. Students will demonstrate the major scale through performance on a mallet instrument or the piano. Students will demonstrate understanding of the political/historical events of the setting of the story.

Students will demonstrate understanding of selected music vocabulary.

Students will distinguish between the role of the lyricist and song writer.

Students will name other musicals that R. Rodgers and O. Hammerstein created together.

Students will listen to instrumental examples of music from the WWII time period.

Materials:

*Sound of Music* musical DVD or video; 174 minutes

Individual copies of *The Diary of Anne Frank*

Individual Copies of *Get America Singing...* series songbook

Unison or 2-part musical selections from the musical: “Do-Re-Mi”, “The Hills are Alive”, “Climb Ev’ry Mountain”, “Edelweiss” can be found as sheet music or in the *Get America Singing...Again*

Xylophones, Orff instruments or piano

Dry Erase Board with markers

Optional: Notation Software, Computer, Speakers, and Internet

Level: Beginning Chorus Grade 6- 8 or General Music Grade 6- 8

Timeline: *Sound of Music* is 174 minutes



Terms: posture, breath support, interval, Solfege syllables, major scale

Skills that have already been introduced: Posture and breath support

Process:

Before class: Write out the solfege syllables. Draw a picture that represents each solfege syllable. Draw the major scale using eight steps. Write the appropriate syllable next to the scale step. Write music vocabulary words on the board--posture, breath support, scale, solfege, interval, arpeggio, libretto, lyricist, folk songs, Broadway and musical.

Geography terms: Vienna, Austria and Germany.

1. Teacher begins the lesson with a familiar song, “Do, Re, Mi”. The teacher models the correlating hand sign while singing the solfege.
2. The teacher will explain the solfege system of hand signs that are used to teach singing. She/he will demonstrate singing and signing the major scale, solfege hand signs and solfege syllables.
3. Students will mimic the sequence of singing and signing to demonstrate their engagement in the lesson. Encourage the students as they work through the sequence.
4. If the students do not already have the music books close by then pass out the series, *Get America Singing....Again*. While students look at the musical notation of the song “Do, Re, Mi”, the teacher asks the students to study the rhythm.
5. Ask the students: Is anyone familiar with the song *Do, Re, Mi*?

Question: Can someone tell us something about this song?

Answer: *Do, Re, Mi* is from the musical *The Sound of Music* which was based on a true story of the von Trapp family. It is what is called historical fiction. It is based on a true story about a real person named Maria. It is set during the pre-WWII days of Austria.



Maria is a young woman who is preparing to dedicate her life to the service of the church. Sensing that she is out of place, the Reverend Mother sends Maria to a family who is in need of a governess. The father, Captain von Trapp, is a decorated Austrian naval officer who has retired to the country with his children. The children and the Captain quickly grow attached to Maria and her powerful love for life. She challenges the Captain's restrictive discipline and convinces the Captain to "love" his children. Maria becomes aware of feelings that she has never experienced before and feels unequipped to deal with. These feelings scare her so much that she runs back to the abbey. With the guidance of the Reverend Mother she comes to understand that she must address her future without fear. Throughout the story the political climate grows increasingly more intense.

Eventually, the Germans take over Austria and the family must escape from the Nazis. The story is based on Maria Trapp's *The Story of the Trapp Family Singers*, 1949. The musical that the students will see was performed on a very famous street in New York, New York. This street is called Broadway and it is where all the entertainment venues were located. *The Sound of Music* ran on Broadway for a very long time. The music to the story was written by Richard Rogers. The lyricist or writer of the words for the music was Oscar Hammerstein. The *Sound of Music* won numerous awards including best picture of 1965.

After viewing the story, ask the students the following questions. These questions will help students to understand the story more thoroughly. Since the musical is based on a true story, it is an excellent tool for also teaching students about the political events during that time.



1. When the story begins, where is Maria? [She is on the mountain singing her heart out to the song “Sound of Music”.]
2. Maria carries an instrument with her. What is it? [Guitar]
3. The children make an unflattering comment about Maria's dress, what does she reply to the captain? [She said that when she entered the abbey she gave all of her worldly possessions away to the poor, but the poor didn't want the dress that she had on.]
4. What device did the captain use to call the children to meet the Fraulein? [A whistle]
5. At the dinner table, Fraulein Maria begins to talk about how the children had been so thoughtful to have given her such nice gifts. What were these gifts? [ A frog in her pocket and a prickly pine cone in her chair]
6. At dinner, the oldest daughter, Liesl, requests to be excused from dinner. The next scene shows Liesl in the garden with Rolf. They begin to sing a duet about being a certain age. What is the age that they sing about? [Sixteen going on seventeen]
7. What is Rolf's job? [He is a telegraph carrier, which is how messages were delivered during that time period.]
8. Fraulein Maria is praying when Liesl sneaks into her room. How does Liesl get into Maria's room? [Climbs in through the window]
9. Why did the children go to Maria's room? [They were afraid of the thunderstorm]
10. The Fraulein is singing a song to the children when the captain appears. The song was about what? [Her favorite things, raindrops on roses, whiskers on kittens]
11. Fraulein Maria asks the captain for play-clothes for the children. He denies her request for the fabric to make them. Instead of giving up, Maria comes up with an idea.



What is her idea? [To make play clothes out of the fabric from the curtains that are going to be replaced]

12. The next day the captain leaves to go on a trip. In her time that she spends with the children, what does Maria teach them to do? [Sing songs using Solfege--Do- Re- Mi]

13. After the captain 'dismisses' Maria as a governess, what happens? [He appears surprised as he listens to the children singing to the baroness]

14. The children put on a unique kind of show with music and puppets. What is the puppet show about? [A lonely goat herder]

15. At the party, Maria demonstrates a dance that she learned as a child. The Captain ends up dancing with Maria. What is the name of the dance? [The Ländler]

16. The captain has a fancy party and the children sing an amusing song. What is the name of the song? ["So Long, Farewell"]

17. At the party Herr Stellar questions the captain about political events concerning the German take-over of Austria. Why does the captain get so angry? [He strongly disagrees with the Nazi party and what the party is doing to innocent people. Herr Steller represents the Nazi party.]

18. After talking with the baroness, Maria decides that she must run back to the abbey. She is very upset and leaves without saying goodbye. Why do you think she ran away? [She did not know what to do with her feelings.]

19. The children missed Maria so badly that they went to the abbey to try to see her. When they returned, they were late for supper. What did the children tell their father that they had been doing? [Picking berries]



20. What does the Reverend Mother tell Maria that she must do? [Return to the children and address her feelings]

21. Maria returns to the family and discovers that the baroness and the captain are to be married. What was her reaction? Joy, sadness, surprise, or disappointment?  
[Disappointment]

22. The baroness tells the captain that they are not right for each other. Afterwards the captain goes to see Maria and finds her in the garden. What do they decide to do?  
[Get married]

23. While Maria and the captain are on their honeymoon the children's uncle commits them to do something. What does he commit them to do? [To sing/audition for a music festival]

24. When they return home the Captain becomes angry with his brother. Why does he get so angry? [Someone has posted a Nazi flag on his home]

25. The captain receives a telegram from the Third Reich. What does it say? [That he should report to serve the Nazi party]

26. What does Maria and the captain plan to do? [Escape during the night]

27. Does their plan work? [Yes]

Tell the students why the captain couldn't say that he was not going to join the Nazi party. People who did not agree with the Nazi party were enemies of the Nazis. Their families were often targeted as dissenters as well.

Language arts students begin to read *The Diary of Anne Frank*. Below is a historical timeline of the events that took place during Anne's brief life. The historical events have



been listed by year and month for the purpose of presenting how quickly the political climate changed.

## TIMELINE

**1889** Otto Frank, Anne's father is born in Frankfurt am Main, Germany. Adolph Hitler is born in Austria.

**1914-1918** Otto Frank serves in the German Army during WWI as a lieutenant.

**1914-1920** Adolph Hitler serves in German Army as a corporal.

**1918** Armistice which ends WWI is signed.

**1919** Germany accepts the Versailles Treaty. Hitler joined the National Socialist German Worker's Party

**1923** National Socialist Germany Workers' Party or Nazi party, held its first rally in Munich.

**1925** Anne's parents marry in Aachen, Germany (Parent names are Otto Frank and Edith Hollander). Hitler's autobiography and anti-Semitic plan is published.

**1926** Anne's older sister, Margot is born.

**1929** Anne is born. Her birth name is Anneliese Marie Frank.

**1932** (July) Nazis receive almost 38% of the vote and are asked to form a coalition government.

**1933** (January) Hitler is appointed Chancellor of Germany. (February) Nazi government suspends the speech and assembly freedoms formerly held by Germans. The Gestapo (German Secret Police) is established. Dachau is built. It is the main concentration camp for political prisoners. (April) Nazis declare boycott of Jewish businesses and medical and legal practices. A law that excluded all non-Aryans removed Jews from government and teaching positions. (May) Burnings of books written by Jews, enemies of the State and other "undesirables". (Summer) Increasing tensions continue in Germany. Anne & Margot join the Frank's grandmother in Aachen. Father, Otto travels to Holland.

(July 13) Hitler banned all political parties except the Nazi party. (Sept.) Otto Frank starts his business Opekta Werke in Amsterdam. (December) Edith and Margot move to Holland.



**1934** (January) Forced sterilizations of the Gypsies, African-Germans and the “unfit” (mentally disabled and physically handicapped) began. Everyone other than the “Aryans” was considered to be racially “inferior”.

**1935** (September) Nuremberg Laws; Jews were declared “non-citizens.” Aryan and Jewish marriage became illegal.

**1936** (March) Germans violate Treaty of Versailles by marching into the Rhineland. Summer Olympics held in Berlin, Germany -- the U.S. participates.

**1937** (Summer) The van Pels family fled from Osnabruck to Holland.

**1938** (March) Germany annexed Austria. (November) By order of the State, Kristallnacht, Jewish businesses & synagogues were looted and destroyed in both Germany and Austria. (December) Fritz Pfeiffer fled from Germany; arrived in Holland.

**1939** (March) Germany occupied Czechoslovakia. Grandmother Hollander went to live with Frank family. Hitler invaded Poland and started WWII. (September) T-4 program implemented. The institutionalized, physically disabled and mentally handicapped were killed.

**1940** (April-May) Germany invaded Denmark, Norway, the Netherlands, France, Belgium and Luxembourg. (December) Otto Frank moved his company to 263 Prinsengracht. In May, he changed its name from Opekta-Werke to Messrs Gies & Company.

**1941** (Summer) Anne & Margot attend Jewish school in Amsterdam. (July) Hermann Goering authorized Reinhard Heydrich to find a “Final Solution” to the Jewish question. (December 11) Germany declared war on the U.S. (January) Margot and Anne's grandmother Hollander dies.

**1942** (January) The “final solution” gains bureaucratic support at the Wannsee Conference. (February, March, April) Auschwitz, Belzec, and Sobibor all become fully operational death camps. (June) Anne received a diary for her 13th birthday. (July 5-6) Margot receives a notice ordering her to report for deportation to a labor camp. The Frank family goes into hiding in the “Secret Annex” the next day. A few days later another family, the van Pels, join them in hiding. November 16, Fritz Pfeiffer joins the two families in the secret annex.

**1943** (February) Soviet forces encircle the German Sixth Army and force them to surrender at Stalingrad, Russia. (June) Heinrich Himmler ordered the complete “liquidation” of Jewish ghettos in the Soviet Union and Poland.

**1944** (June 6) D Day. The Allies invaded western Europe. (August 4) Anne's family and others hiding with them in the secret annex were betrayed and arrested. They were transported to a transit camp in Westerbork. (September 3). They were transported in a



cattle car to Auschwitz. This was the very last transport to leave Westerbork. Herman van Pels was gassed on September 6. After their arrest, Miep Gies, a friend who had been helping them discovers them gone. She finds Anne's diary and stores it to give to Anne once she returned. (October 6) Anne and Margot were sent to Bergen-Belsen concentration camp.

(November 25) In an effort to hide war crimes, the Nazis began the demolition of the crematoria at Auschwitz. (December 20) Fritz Pfeff died in Neuengame.

**1945** (January 6) Edith, Anne's mother, died at Auschwitz-Birkenau. (January 27) The Russian army liberated Auschwitz. Otto Frank is first taken to Odessa and then to France and then allowed to go to Amsterdam. (February- March) Anne and Margot die at Bergen-Belsen concentration camp (Spring) Mrs. van Pels dies in Theresienstadt concentration camp in Czechoslovakia.(April 30) Adolph Hitler committed suicide (May) Peter van Pels died in Mauthausen. (May 7) Germany surrendered, the war in Europe ended. (June 3) Otto Frank arrived in Amsterdam, met with Miep and Jan Gies. He began to look for Anne and Margot. (October 24) Letter received by Otto telling him of his daughters' deaths at Bergen-Belsen. (November 20) Nuremberg Trials begin

**1947** (Summer) Mr. Frank contacts a publisher in Amsterdam. 1,500 copies of Anne's diary are published.

**1951** Anne's diary is translated into English

**1955** The Broadway play *The Diary of Anne Frank* opens.

**1960** (May) The Anne Frank House opens as a museum.

**1980** Anne's father, Otto, died in Switzerland at 91 years of age.

**1988** Miep Gies, the one who found Anne's diary, wrote *Anne Frank Remembered*

**1995** The "definitive edition" of the diary was published in the U.S.

**1997** A new adaptation of *The Diary of Anne Frank* opened on Broadway.



### Additional Holocaust Resources

The following websites contain a wealth of information, ideas, worksheets and links to music, art and theatre connections that teachers can use to further develop interdisciplinary units.

- A Teacher's Guide to the Holocaust-

<http://www.citejournal.org/articles/v4i2socialstudies1.pdf>

- Florida Holocaust Museum Website <http://fcit.usf.edu/holocaust>

- The BCHS Technology Integration Hope Page is a network of created lessons and units that could easily be called a goldmine. Maureen Yoder has an informative article on using Web Quests. In the article she instructs how to use the internet as a tool to put everything you need to teach--at your fingertips. One of the links sends you to a Web Quest on "Anne Frank and the Children of the Holocaust".

<http://www.spa3.k12.sc.us/webQuests/Anne%20Frank/index.html>.

Another excellent address is:

- <http://www.robertaylor.com/clientuploads/documents/curriculum/Handouts/10304AHA.pdf>

### Other Ideas for Teaching the Holocaust

Consider the recent debates on ethics in science topics. The Nazis conducted many science experiments. One of the experiments included cloning. Recently, scientists have been successful cloning sheep. Individuals who have pets that they are especially fond of can have a "clone" of their pet created. An interesting subtopic of the Holocaust would be a discussion or project that focuses on the moral and ethical issues of cloning. Should



humans attempt to clone humans? The impact of the Holocaust on the different states could also be a route for exploration. Also, the Georgia Department of Education includes an optional standard (SS8H9c) which involves explaining the impact of the Holocaust on Georgians.



## **Language Arts Lesson Plan: Music Interview Project**

The student listens to and views various forms of text and media in order to gather and share information, persuade others, and express and understand ideas. The student will select and critically analyze messages using rubrics as assessment tools.

### Standards:

When responding to visual and oral texts and media (TV, radio, film, electronic media), the student:

- A. Will analyze the effect on the view of image, text and sound in electronic journalism.
- B. Identify the techniques used to achieve the effects studied in each instance.
- C. Organize information and prepare the material to be presented in a PowerPoint.
- D. The student will:
  1. Present the musical groups preferred by the interviewees. The interviewer will prepare a PowerPoint that will educate his classmates on the interviewees preferred groups.
  2. Organize the information to educate his/her peers on the music of previous generations.
  3. Uses rubrics as assessment tools.
  4. Will respond to oral communications with answers, challenges, or affirmations.
  5. Will use multimedia in the presentation.
  6. Demonstrate the important role that music plays in cultural customs.

### Goals:

1. To initiate curiosity in the scientific method.



2. To teach understanding in and of the important role that music plays in cultural customs.
3. To make human connections with the community such as parents, grandparents and neighbors. By working with members of the community students will learn appropriate social skills.

Materials:

The teacher develops a dramatic podcast or movie that demonstrates what the teacher expects from the students. Give each student a copy of the interview form.

Process:

Students will interview various people about their experiences with music. If given the opportunity to listen to a selection that the interviewee especially likes, do so.

Students should listen to the "tunes" that the interviewees name and write comments on paper. If possible, bring copies of the songs to school. All songs must be G or PG rated. Students can be grouped in small groups to develop Power-Points describing the artists that the interviewee's named. Adding in song clips (iPod or mp3 clips) will help the Power-Point to be more enjoyable. Student groups can present to the class on a specified day. Students should use proper English grammar in their "write-ups" for the presentation. Each student of the group should present their portion of the Power-Point. Power-Points should be artistically descriptive and should contain a limited number of slides per group/artist.



## Interview Form

Hello, my name is \_\_\_\_\_ (student's name) and I attend \_\_\_\_\_ school. I am in the \_\_\_\_ grade and I have a project that I am working on that involves several subjects. I would greatly appreciate if you could take a few minutes and answer some questions for me. The survey will take approximately 15-30 minutes depending on how much you would like to share.  
Any time that you could offer to help me complete this survey would be greatly appreciated!

Person interviewed: Name (\*Dr., Mr., Mrs., and Ms.) \_\_\_\_\_  
(\*Circle appropriate title)

Male  Female Current Occupation \_\_\_\_\_

Age Range:  70+  60+  50+  40+  30+  21+

1. Have you ever participated in a performing organization?  
(Band, Orchestra, Chorus, Soloist)  Yes  No

2. If the answer is no, please proceed to questions number three.

If so, what instrument(s) did you perform with? \_\_\_\_\_

For how long? \_\_\_\_\_ Please circle one: Years Months

What level did you achieve?  Really good!  Pretty good!  Sort of good  
 Other \_\_\_\_\_  Other \_\_\_\_\_

3. When you were growing up what words would you use to describe your family's attitude toward music?
- 
- 

Adjectives and phrases that could be used to answer #3: supportive, important, uninterested, musical, talented, fun, musically active, always performing, enjoy concerts

4. What type(s) of music do you enjoy? Check all that apply.

Classical  Popular  Rock  Jazz  
 Gospel  R & B  Country/Western  
 Other\* \_\_\_\_\_  Other\* (\*Please list)

Other\* \_\_\_\_\_  Other\* (\*Please list)



5. What importance does music have in your life today? Please explain if needed \_\_\_\_\_

---

- Very important; Listen to music every day and every opportunity
- Very important; Play or sing on a daily basis
- Pretty important; Play or sing on a weekly basis
- Important; Play or sing with friend's  monthly  weekly  rarely
- Important; You always have some form of music playing such as radio, CD, etc.
- Somewhat important; Listen to music in social settings (church, family functions, etc.)

6. Do you have a collection of  DVD's  CD's  Records  Cassettes  
\_\_\_\_\_ Other related information

Do you listen to the radio regularly?  Yes  No

If so what station? \_\_\_\_\_

7. Annually, how much would you say that you spend on music (including equipment for music, instruments, recording or performing equipment, CD's, records, musical gifts to others, music related reading)? If you are responsible for purchasing music equipment/music for a church or other entity please mark here \_\_\_\_\_.  
 \$1000.00+  \$500.00+  \$250.00+  \$100.00+  \$50.00+  \$25.00+  
 <\$25.00

8. What were some of your most favorite songs and artists when you were a teenager?  
Are any of these songs/artists still popular today?

---



---



---



---



---



---

Thank you (Dr., Mr., Mrs., Ms.) \_\_\_\_\_ for your time. My project will be greatly enhanced thanks to your participation.

Shake the person's hand, and thank the person again.



## **Reading Across the Disciplines: Imagine an Occupation In the Arts**

Activities: Reading, building research skills using books, interviews, creative writing, visual art, recording technology such as camera, video, or video recorder, creating PowerPoint

Teacher Prep: Collect resources for the project

1. Visit the school librarian and discuss the selection of biographies of people who work in the arts. If the selection is not adequate, ask the librarian if some could be ordered. You can also encourage students to visit their local public library. Be prepared to offer a list of biographies of instrumentalists, vocalists, artists, recording engineers, musicians, singer-songwriters, composers, etc.

2. Use the internet to seek out posted job descriptions of arts and non-arts occupations.

The job descriptions should contain the kinds of experiences the applicant should have to be considered for the occupation.

For the project, students will:

- 1) Prepare a Power-Point on their artist and his/her occupation. Music selections that pertain to the artist should be added into the presentation. If the arts person they selected is not a music person then the student should select music that adds value to the presentation.

- 2) Collect several pictures of the artist. These pictures may be found in magazines, newspapers or the internet.

Goal: To familiarize students with exciting careers in the arts.

Assessment: overall student presentation



Activities: Students will research selected occupations. Students begin by selecting a biography of a person who is employed in the arts. After reading the biography, the student searches for information on the artist's occupation. This information should include the childhood, events that influenced the selected person, training, Information may be collected by reading a book or magazine or articles on the internet. Students may also choose to interview someone in the selected occupation. This project should propel student thinking towards their future. It will also encourage them to read and research a topic that is or may be important to them in the future.

The facilitator says: *Imagine you are an adult who is seeking a job. As an adult, it is important to have a job that pays enough for you to support yourself. You would probably like to have a nice home and reliable transportation. I bet that you can think of other things that you may also like to have. Think of an occupation that you are interested in and would like to explore. Reach for the sky! Imagine that you are what you have always dreamed of being! Maybe you would like to be an actor or a chart-topping musician, or maybe you would prefer to be a designer who creates your own clothing line. You could a playwright, a choreographer or even a recording engineer. Perhaps you are more interested in the business side of the arts. Allow students to name other arts occupations.*

Continue with the following if needed:

*Can you name some other artistic occupations that people would be interested in that have not been named? Other options: drama or music teacher, arts critic, agent, composer, dance instructor, an arts administrator, museum curator or community arts event planner. Students will create an advertisement for the occupation they have chosen.*

The advertisement should be written much like a job posting. It should include



information on what skills the person should possess, the kind of experience(s) the person should have and what the person should be able to do in order to be selected for the job.



## Social Studies Lesson Plan: South and East Asia

**Subject:** History of China

Created by Shirley Pault & Adonna Clark of Midland Middle School, Midland, Ga; Used by permission

**Materials:**

Handouts, paper, pencil, textbook, colors; CD- *Raid on the White Tiger* performed by the Beijing Opera. Computer for internet access to School tube where Chinese new year videos can be found, TV, Aver Key, additional speakers that will enhance the sound from the videos

**Standards:**

Social Studies Grade 7 The student will analyze continuity and change in Southern and Eastern Asia leading to the 21<sup>st</sup> century. Describe the impact of communism in China in terms of Mao Zedong, the Great Leap Forward, the Cultural Revolution, and Tiananmen Square. Fine Arts Music, National

Fine Arts Music, National Standard—Listening, analyzing music

**Process:**

**Day 1-2**

Teacher and students discuss the material and view the teacher created PowerPoint. As they listen, they will fill in the blanks on their listening guide. They will then be given a written copy of the discussion. If a student misses an answer, he/she can review the written copy.

Vocabulary: communist, nationalist, landlord, foreign, free enterprise, radical, culture, revolution, democratic, reform, condemnation, liberalization. Listen to pre-selected



numbers from Beijing Opera. Demonstrate the pentatonic scale. Explain that the pentatonic scale is used in Chinese music.

Ask students if they can identify the kind of instruments they hear. Show pictures of erhu, zither, Chinese flutes. Play the example of the erhu from [www.geocities.com/risheng99/instruments/erhu\\_sound.html](http://www.geocities.com/risheng99/instruments/erhu_sound.html). Demonstrate the pentatonic scale on the xylophone, violin, etc. Tell the students that the pentatonic scale is used all over the world in many different kinds of music. It consists of five notes. Ask students to identify and compare the differences between the erhu and the modern violin.

#### *Erhu or Chinese violin*

2 strings; A & D tuned a fifth apart  
 Held upright on the performer's thigh  
 Has no fingerboard; strings are stretched over a wooden drum like resonator;  
 strings are supported by a vertical post that pierces the resonator  
 The bow is positioned between the two strings  
 Used as a solo instrument and an orchestra instrument  
 Snake skin covers the sound box

#### *Violin*

4 strings: E, A, D, G tuned a fifth apart  
 Can be played standing or sitting  
 Has a fretless ebony fingerboard  
 The bow hair is pulled up and down over the strings  
 Used as a solo instrument & orchestral instrument  
 Shaped similar to a figure 8; made of ebony, rosewood, maple

Discuss the vocabulary associated with the lesson.

#### Day 3-Day 7

Play the pre-selected School Tube ([schooltube.com](https://www.schooltube.com)) videos on the Chinese New Year. Give students a Bloom's taxonomy menu for the material studied yesterday. They will choose one activity from each column to complete for a total of 100 points. They will put these together and turn them in for a project grade.

Anyone who needs to present will do so on the last day.



Homework: Bring anything from home that you feel you will need to complete the work.

Evaluation: Teacher observation, class work, notebook, project

Resources: Holt Rinehart Winston textbook *People, Places, Change*, the internet,

teacher's personal collection, CD *Raid on the White Tiger Regiment Symphonic Suite*

composed by Guo Tai Gong, performed by the Beijing Opera Symphonic Suite; School

Tube can be found at [www.schooltube.com](http://www.schooltube.com)



## Handout on China

### CHINA: COMMUNISTS AND NATIONALISTS

#### Mao Zedong

After World War II, civil war broke out in China between the nationalists and the Communists. The Nationalists wanted to strengthen China so it could manage its own affairs without other nations. The Communists wanted to break the power of the landlords and other wealthy people and drive out all foreign influences. During this war, the First Front Army of the Communists was about to be destroyed. Mao Zedong led the army in retreat on what became known as the **Long March**. They marched 8,000 miles in 370 days traveling over very difficult terrain. Only 1/10 of the forces made it. Mao Zedong's leadership during the march gained him approval and led to him eventually becoming leader of the Communist Party. Two other parts of the army also participated in their own long marches. Finally, the three groups joined each other. The Communists won the civil war in 1949, and made China a communist nation. This meant that the government owned large industries, businesses, and most of the country's land. When the Communists took power in 1949, they had few friends among the nations of the world. The United States had backed the Nationalists. The Soviet Union had been on the Communists' side, but later withdrew its support. The two nations disagreed about how a communist society should be run. Huge problems faced the Communists when they took control. China had not had peace for almost a century. Most Chinese were extremely poor. Their methods of farming and manufacturing were out of date. Under the leadership of Mao Zedong (mow zuh dung), China made huge changes. The government seized all factories and businesses. But Mao was not satisfied. Economic growth was too



slow. In the 1950's, Mao began a policy of radical, or extreme change. This policy was called the "**Great Leap Forward**" but turned out to be a giant step backward. The Communists rushed to increase production on farms and in factories. They ignored the need for experience and planning. For example, they ordered a huge increase in steel production. Thousands of untrained workers built furnaces for steel-making that never worked. In 1966, Mao introduced another radical policy called the **Cultural Revolution**. His aim was to create a completely new society with no ties to the past. The people were forbidden to teach their children western music. They could only teach Chinese music. Parents who wanted their children to learn classical music had to teach their children secretly. They did so by covering the strings of the piano with quilts so that the neighbors could not hear western music being played or practiced.

Mao began the process by urging students to rebel against their teachers and families. The students formed bands of radicals called the **Red Guard**. These bands destroyed some of China's most beautiful ancient buildings. They beat up and imprisoned many Chinese artists and professionals such as lawyers and doctors. When the Red Guard began to threaten Mao's government, they were imprisoned, too. Mao called for an end to the Cultural Revolution in 1969. The three years of turmoil had left China in a shambles, with hundreds of thousands of citizens dead. During the late 1970's, the Communists began to realize that their policies had hurt China. After Mao's death in 1976, more moderate leaders gained power. During the next 20 years, they gradually allowed limited free enterprise.



### Tiananmen Square Protests of 1989

**Hu Yaobang** lived from 1915 until 1989 and was a leader of the People's Republic of China. He was famous for supporting reforms toward capitalism, free markets, and liberalization in China. He was forced to resign in 1987 by people who did not share his views. A day after the death of Hu Yaobang people who favored democratic reform in China started small protests. These demonstrations centered on Tiananmen Square in Beijing, but other large-scale protests also occurred in cities throughout China. These protests lasted seven weeks until tanks cleared Tiananmen Square on June 4<sup>th</sup>. Many died at the Square and in Beijing. The government conducted widespread arrests so that protesters and their supporters would be discouraged to continue. Other protests were stopped around China, and the foreign press had to leave the country. The violent suppression of the Tiananmen Square protest caused widespread international condemnation of the People's Republic of China government.



**Directions:** You are to choose one activity to complete from each column for a total of six (6) activities. Each column is worth a certain amount of points.

Remembering (10 points)	Understanding (10 points)	Applying (15 points)	Analyzing (20 points)	Evaluating (20 points)	Creating (25 points)
Define all the words on the word wall. Write neatly. If it is a person or place, give a brief description.	Draw a map depicting the Long March. Use color and label main places and physical features.	If you had been Mao Zedong, what would you have done differently? Write a 4-5 paragraph essay (introductory, concluding, & 2-3 supporting paragraphs)	List at least five life lessons that can be learned from either the Cultural Revolution or Tiananmen Square. Be neat.	Consider Tiananmen Square. Choose a side and prepare a lawyer's opening speech for court defending the side you have chosen.	Design a textbook cover for the information we have studied. Use newsprint and make it large enough to fit our social studies book.
Create a crossword puzzle of all the words on the word wall. No hanging words. No two words side by side. Number all words. Include clues.	Restate the information in the paper in a song put to any tune you choose. Write one verse and one chorus. Be prepared to sing it.	Make a 3-D diorama depicting either Tiananmen Square or the Long March. Be neat & creative. Use things you do not have to buy. Do not make it any larger than shoebox size.	Design a questionnaire of 10 questions about one of the topics on the information sheet. Go to the Internet to find the answers. Provide names of sources.	Choose a partner and a subject: Red Guard or Tiananmen Square. Each of you should choose opposite sides of the issue and prepare a 2-min. argument for a debate. You will present your debate in class.	Create an anti-communism TV commercial. You will present it to the class. Prepare the props and background for use during presentation.
List the main points of the article in a bulleted list. Have at least 15 main points.	Make a picture frame around a whole page of copy paper. At the top, draw a ½ page picture of Mao Zedong. On the bottom, list 10 facts about him. No stick figures. Use color.	Design a scrapbook about one of these: Great Leap Forward, Cultural Revolution, Long March, or Tiananmen Square. (5 pages with pictures, labels, & decorated pages)	Design a magazine advertisement for the Red Guard. The ad can be encouraging or discouraging people to join them. Use color.	List ten reasons why you feel Mao Zedong made huge mistakes.	Choose an event that we have studied and prepare a skit to present to the class. You may not talk or write on the board. The students will guess the event. Have a beginning, middle, & end. Do not be too brief.
Make any type of foldable to list 15 main points of the article. (You may see the teacher's foldable book for ideas.)	Write a paragraph explaining the Cultural Revolution. Put it in your own words. Have topic sentence, 4 supporting details, & concluding sentence.	Make up a board game. Use the information on the sheet to make your questions for the game. Include directions, answer key, & markers. Be neat and use color.	Make a flow chart that explains the happenings of the Great Leap Forward. Include 5 levels.	Prepare a report card for Mao Zedong and give him grades. Include five areas on which you are grading him.	Design a cereal box that will be introduced into China. The theme of the cereal should be anti-communism. You may cover a cereal box with newsprint to design all sides. Use color & pictures.



## APPENDIX B

### Other Interdisciplinary Resources for Teaching



## Other Interdisciplinary Resources for Teaching

Americans for the Arts. Policy, advocacy, research & information, professional development, partnerships and visibility issues. [www.artusa.org](http://www.artusa.org).

And They Kept on Dancing. History of dance, map of folk dancing, famous dancers & movie clips. <http://library.thinkquest.org/J002266F/>

*Art Teacher's Survival Guide.* Written by Helen Hume, a 30 yr. veteran teacher. This is a great book for classroom teachers or art teachers who would like new ideas. Multicultural, reproducible, detailed instructions with illustrations, tips, tools and resources.

Arts education Ideas Inventive Designs for Education and the Arts, LLC.  
Interdisciplinary articles, ideas, curriculum & implementation.  
<http://www.aeideas.com/totallit.cfm?sub=articles>

Arts Education Partnership (formerly known as the Goals 2000 Arts Education Partnership) is a nonprofit coalition of more than 100 national education, arts, business, philanthropic and government organizations that demonstrate and promote the essential role of arts education in enabling all students to succeed in school, life and work.  
[http://aep-arts.org/resources/artsintegration/arts\\_integration\\_book\\_final.pdf](http://aep-arts.org/resources/artsintegration/arts_integration_book_final.pdf)

*Arts Go to School, The.* by D. Booth & M. Hachiya. Excellent resource for those interested in interdisciplinary arts. Contains lesson plans.

ARTSEDGE, The Kennedy Center. Great resource for articles, contacts, lesson plans, podcasts, web links and more. Database of complete interdisciplinary lessons on a wide variety of topics such as Civil war music, James Wyeth, Jazz, WWII, Duke Ellington, How many cells are born in a day? , etc. Lessons can be searched by subject(s), grade level. For grades k-12. <http://artsedge.kennedy-center.org/>

Association for Integrative Studies Web site. To promote the interchange of ideas between administrators and professionals. Some issues are available for perusal.  
<http://www.units.muohio.edu/aisorg/pubs/issues/toclist.shtml>

*Creative Ideas for Music and Humanities Classes.* By G. Parker. Reproducible book of interdisciplinary activities. For use by upper grade teachers. Contains lots of lists, forms, and lesson plans.

Edutopia. The George Lucas Educational Foundation. A great interdisciplinary site- trial membership; e-newsletter. <http://www.edutopia.org/>



Illuminations. Unique resources for teaching math. Has online standards, games, lessons and more. <http://illuminations.nctm.org/>

*Interdisciplinary Approaches to Curriculum; Themes for Teaching* by Thomas Post, Alan Humphreys, Arthur Ellis & Joanne Buggey. Three chapters on interdisciplinary teaching; includes rationale, how to and sampler thematic units on transportation, communication, consumerism and time.

*Kids Can Press Jumbo Book of Music*, The. Written by D. Dunleavy. How-to book about making instruments and making music. Each chapter features a different kind of band. Wealth of activities for making instruments including pan pipes, shanty-band instruments, water glass orchestra and much more.

Music Alive. Cherry Lane Music Foundations, Inc. Excellent way to get students reading-about things they are interested in. These lessons are class-tested and proven-- Language Arts/music interdisciplinary lessons. [www.musicalive.com](http://www.musicalive.com)

*Music of Many Cultures*, By Carol Mathieson, Mark Twain Media/Carson –Dellosa Publishing. Reproducible activity book with information on Southeast Asia, Latin America, India, Persia, Sub-Saharan Africa, Multicultural.

*One-hundred Experiential Learning Activities for Social studies, literature, and the arts*. grades 5-12 by Provenzo, Butin and Angelini. Excellent resource for interdisciplinary lessons.

Ovation TV. Performance, people, art, music and film. [www.ovationtv.com](http://www.ovationtv.com)

Rock-n-Roll Hall of Fame. Summer institute for teachers. Over 50 lesson plans on topics such as civil rights and the blues, Using rock with Jimi Hendrix to teach literary devices, Woody Guthrie and the Grapes of Wrath. Great site for ideas and lessons. <http://www.rockhall.com/teacher/sti-lesson-plans/>

Schooltube is a safe and fun way students to view their work online. Student work is accessible by others such as distant family, teachers from other schools. <http://www.schooltube.com>

U.S. Department of Education. Professional development for arts educators-arts in education. <http://www.ed.gov/programs/artsedprofdev/2008awards.html>

Web English Teacher. Interdisciplinary resources for all subjects. <http://www.webenglishteacher.com/interdis.html>



## References

- Burnaford, G., Brown, S., Doherty, J. & McLaughlin, J. (2007). Arts integration frameworks, research and practice: A literature review. Retrieved from [http://aep-arts.org/resources/artsintegration/arts\\_integration\\_book\\_final.pdf](http://aep-arts.org/resources/artsintegration/arts_integration_book_final.pdf)
- Consortium of national arts education associations. (2002). *Authentic connections: Interdisciplinary work in the arts*. [Brochure]. Retrieved from <http://www.naea-reston.org/pdf/INTERArt.pdf>
- Darling-Hammond, L. (2007). Evaluating no child left behind. *The Nation*. Retrieved from <http://www.thenation.com/doc/20070521/darling-hammond/print?rel=nofollow>
- Eisner, E. (2000). Ten lessons that the arts teach. In A. Spitz & Associates (Eds.) *Learning and the arts: Crossing boundaries*. Chicago: Amdur Spitz & Associates, Inc. Retrieved from <http://www.artssmarts.ca/media/en/learningcrossingboundaries.pdf>
- Fiske, E. (1999) *Champions of change: the impact of the arts on learning*. Arts education partnership and the President's Committee on the Arts and the Humanities. Retrieved from [http://aep-arts.org/publications/info.htm?publication\\_id=8](http://aep-arts.org/publications/info.htm?publication_id=8)
- Fowler, C. (1996). *Strong arts, strong schools*. New York: Oxford University Press.
- Goldberg, M., Scott-Kassner, C. (2002). Teaching other subjects through music.



- In R. Colwell & C. Richardson (Eds.) *The new handbook of research on music teaching and learning* (pp. 1053-1065). New York: Oxford University Press.
- Government Accountability Office (GAO). (2009) *Access to arts education*. Retrieved from <http://www.gao.gov/new.items/do9286.pdf>
- Jensen, E. (2001). *The arts with the brain in mind*. Alexandria, VA: The Association for Supervision and Curriculum Development.
- Larsen, R. (2000). Toward a psychology of positive youth development. *American Psychologist*, 55, (1) 170-183.
- Mark, M. (1996). *Contemporary music education*. Belmont, Ca.: Wadsworth/Thomson Learning.
- Purnell, P. (2004). A place for the arts: The past, present and teacher perceptions. *Teaching Artist Journal* 2(3), 153-161.
- Oberman, I. (2007). *Learning from Rudolf Steiner: The relevance of Waldorf education for urban public school reform*. Retrieved from ERIC. (ED498362).
- Oddleifson, E. A fifty school arts education demonstration project. Previously published in New Horizons for Learning's *On the Beam*, XI (1), Fall 1990, p. 4-5; 251 Retrieved from <http://www.newhorizons.org/strategies/arts/cabc/oddleifson1.htm>
- Rose, Dale. (2006). *Implementing high-quality arts education in public elementary schools and child development centers: Lessons learned from the four-year journey within the San Francisco Unified School District*. Retrieved from



[www.artsusa.org/pdf/events/2007/convention/handouts/arts\\_education/california\\_carries\\_the\\_torch\\_june1\\_1015am.pdf](http://www.artsusa.org/pdf/events/2007/convention/handouts/arts_education/california_carries_the_torch_june1_1015am.pdf)

Snyder, Susan. 1999. On becoming h.o.t.; Creating an arts-infused curriculum. Retrieved January 1, 2009 from <http://www.aeideas.com/text/articles/becominghot.cfm>

SCEATennessee Arts Commission

[http://www.arts.state.tn.us/ae\\_stuff/ae\\_roster\\_arts\\_integration.pdf](http://www.arts.state.tn.us/ae_stuff/ae_roster_arts_integration.pdf)

WTVM (2008). Wynnton Arts Academy Charter. Retrieved March 13, 2009 from <http://www.wtvm.com/global/story.asp?s=9009068&ClientType=Printable>

Zull, James. The Art of Changing the Brain. Retrieved October 31, 2008 from <http://www.newhorizons.org/neuro/zull.htm>









